Assessing PrEP Capacity, Processes, and Technical Assistance in Local Health Departments throughout Michigan

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Abstract

Background

Pre- exposure prophylaxis (PrEP) is a biomedical intervention that was approved by the Federal Drug Administration (FDA) in 2012 to reduce the chances of acquiring HIV (human immunodeficiency virus) by 90% or more. Numerous studies have been conducted worldwide analyzing different risk populations and showing the efficacy of PrEP by reducing transmission of HIV. Currently, the state of Michigan has very little evidence on who is taking PrEP, which facilities are prescribing or referring PrEP, or what PrEP activities are taking place in a clinical setting. Local health departments (LHDs) are key players in screening individuals who are at risk for getting STDs, which serve as a population of those who could also get infected with HIV.

Methods

In 2017, the Michigan Department of Health and Human Services (MDHHS) developed a survey to assess LHDs capacity, processes, and technical assistance regarding PrEP. Prior to this survey there has been one other survey about PrEP but was only distributed to private physicians in Michigan. The current survey was sent to 45 LHDs, with responses from medical directors, health officers, and STD clinic management. The survey was designed to assess three components for each LHDs: current PrEP activities, strengths and weakness of the activities, and potential resources or tools that could aid clinics in future PrEP implementation.

Results

The results revealed that there were 59 respondents and of the 45 LHDs in the state, 42 (93%) provided responses. According to the three groups of respondents, 12% of clinics were prescribing PrEP, 52% were referring PrEP, and 37% were not doing any activities around PrEP. Clinics who are currently prescribing PrEP want to continue their PrEP activities and monitor PrEP uptake. However, 64% of clinics indicated they were undecided or not likely to implement PrEP in the future. All clinics expressed interest in receiving more guidance from the state health department and an increase of education and resources for staff and patients.

Conclusion

Considering this was a baseline survey, the response rate was quite high for LHDs throughout Michigan. The survey indicated what PrEP activities LHDs were engaging in and what they would like to do in the future. About half of the respondents stated they are not doing any activities around PrEP, which can call for more action in those clinics. However, all respondents expressed interest in receiving more information and resources on how to expand PrEP activities in their clinic.

Introduction

As of 2016, The Center for Disease Control and Prevention (CDC) (2017-a), classifies the Human Immunodeficiency Virus (HIV) as an infection that kills the body's CD4 cells (T cells) and destroys the immune system. HIV is commonly known to spread through sharing needles or syringes, sexual contact (anal, oral, or vaginal), blood transfusions, or perinatal transmission – as in from an infected mother to a child (CDC, 2017-c). There is no cure for HIV/AIDS but medications like anti-retroviral therapy (ART) can help slow the progression by reducing the replication process of HIV. If an individual suspects they may have acquired HIV, rapid tests can be used to determine preliminary results for HIV. If a test is positive then the individual will follow-up with additional blood work to identify the viral load and CD4 count. The CD4 and viral load helps establish the severity of the disease. Thus, a viral load is the amount of copies a person has of HIV in their system (AIDSMap, 2017). A CD4 count is the number of T cells in the body that protect from infection. A viral load of 100,000 copies per mL is considered having a lot of HIV in the body. Also, a CD4 count less than 200 means there are very few T cells helping fight the high amount of HIV in the body (AIDSMap, 2017). The viral load and CD4 counts pinpoint the stage of HIV and the prognosis of the disease. In a person living with HIV, continuous blood work is required to ensure the disease is being monitored and does not progress to the acquired immunodeficiency syndrome (AIDS), which is the third stage of HIV.

There are three distinct stages of HIV, with the first being known as the acute HIV infection stage. This stage usually occurs 2 to 4 weeks after contact with an HIV-infected person. The CDC (2017-a) has indicated that some individuals will experience signs and symptoms that are similar to the flu in response to the infection. The second stage of infection, clinical latency,

is referred to as the stage that can be asymptomatic. The HIV virus reproduces very slowly but can also be very infectious at this stage. Those who are taking ART for HIV can stay in this stage for a long period of time and reduce the chances of transmitting HIV to another individual, if medication is taken correctly and viral loads are low (CDC, 2017-a). The last stage of HIV is when an individual progresses to AIDS. This means that their immune system has been damaged so badly that they are at a very high risk for opportunistic infections. If individuals do not take ART as prescribed they can increase their chances of death along with a high viral load causing HIV to be transmitted very easily to their partners (CDC, 2017-a). With the proper use of ART, HIV can be a very manageable disease. Those who are living with HIV can have low or undetectable viral loads, reduce transmission to others, and live a life free of AIDS.

The first case of AIDS was reported in Los Angeles on June 5th, 1981. Most people, including scientists, believed it was only being transmitted by gay men, which is why it was initially referred to as “The Gay Man’s Disease”. However, a year later, it was then thought that AIDS was being transmitted through blood products and pregnancies. According to the CDC’s HIV/AIDS timeline, female partners of males and needle sharing partners reportedly began acquiring AIDS between 1983 and 1984 (National Prevention Information Network [NPIN], 2017). At the time, doctors and scientists could not understand the seriousness of the quickly progressing disease. In 1986, the CDC announced that they were certain HIV was not transmitted through casual contact, food, water, air or environmental surfaces. Although individuals were being educated about AIDS, over a half million (683,000) people were already living with HIV by the end of the 1980s. It was not until around 1995 that the CDC established guidelines on prevention of HIV transmission and opportunistic infections (NPIN, 2017). Toward the end of the 1990s, while mortality was finally declining, a guide was developed on the use of medication

for persons living with HIV. Before entering the 2000s, the number of persons living with HIV was close to a million. During the millennial years, congress took a big step in creating funding for prevention and for those who were already living with HIV, such as the Global AIDS and TB Relief Act, the President's Emergency Plan for AIDS Relief Act, and Act against AIDS (NIPN, 2017). In 2008, the CDC estimated that over half a million people had died from AIDS and predicted there would be 56,300 new infections a year. From 2011 on, the release of a new framework to focus on HIV prevention efforts was established. HIV treatment, was shown to reduce transmission by 96% (if undetectable viral loads are present) and the first evidence-based study of PrEP was in the processes of being approved by the FDA (NIPN, 2017). After continuous research, education, and prevention efforts over the past decade, significant progress has been made with reducing HIV rates, although an epidemic still remains in some populations.

According to the CDC (2017-c), 1 in 2 gay or bisexual Black men will acquire HIV and 1 in 6 gay or bisexual men will be diagnosed with HIV in the years to come if trends remain the same. As of 2014, there were 37,600 new HIV infections and an estimated 1.1 million people are currently living with HIV in the United States. However, 1 in 7 individuals in the U.S. do not know that they are infected with HIV. As of recent, the CDC (2017-c) stated, all new HIV infections are 70% male-to-male sexual contact, 23% heterosexual contact, and 7% include both injection drug users (IDU) and men who have sex with other men (MSM). Also, in 2015 Blacks were disproportionately impacted by HIV, making up 45% of all new HIV infections. Specifically, Black males aged 13-24 years old is the population impacted most significantly by HIV. Although, the CDC (2017-c) showed, Blacks only account for 16% of the population, they comprise 22% of new HIV infections. Following Blacks, Whites represent 27% of those newly diagnosed with HIV and Hispanics 24% (CDC, 2017-c). Reviewing the most highly-impacted

subpopulations from 2015; 10,315 were Black MSM, 7,570 White MSM, 4,142 Black heterosexual women, and 1,926 Black heterosexual men (CDC, 2017-c). Moreover, sexually transmitted diseases (STDs) are an indicator of risky behaviors that can transmit HIV as well as other STDs. These rates suggest HIV is a continuing public health problem within the U.S.

Michigan is closely monitoring the same trends for those age groups with new HIV infections. Particularly, the Michigan Department of Health and Human Services (MDHHS) division of STD supports all LHDs and other community partners to assure services are accessible to those at highest risk – despite ability to pay. The STD program goals are to report cases in a timely manner, review the screening and treatment services, and investigate cases to reduce and intervene with the spread of disease. New HIV infections have slowly increased throughout the state of Michigan from 653 in 2014 to 735 cases in 2016 with rising rates prominent in MSM, who represent 22% of new infections (MDHHS, 2015-b). Additionally, from 2009 to 2013, MSM accounted for 56% of new HIV cases, with Blacks comprising 57% of those cases (MDHHS, 2015-b). Likewise, MDHHS (2015-a) indicated on their HIV factsheet that in 2015 young teenagers (13-24) who identify as MSM made up 600 of the new HIV cases – 486 of which were Black. Thus, the public health focus nationally and statewide is developing interventions to reduce the disproportionately high rates of HIV infection in young MSM aged 13-24 years old. Due to the staggering rates of HIV, there is a calling for the need of PrEP implementation in clinics across the country.

Literature Review

Although there is no cure for HIV/AIDS, there is a biomedical intervention that has been developed to reduce the transmission of HIV. Pre-exposure prophylaxis (PrEP) is a daily dosing of tenofovir and emtricitabine (Truvada ©) used for preventing HIV. Several studies conducted

with different risk populations have demonstrated the efficacy of PrEP. One of the most popular studies is the Pre-exposure Prophylaxis Initiative (iPrEX), which was conducted in Peru, Ecuador, Brazil, Thailand, South Africa, and the United States. Grant et al. (2010) recruited 2,499 men and transgender women who were HIV-negative, 18 years or older, and given antiretroviral drugs (Truvada) or a placebo for the duration of three years to participate in the study. In addition to the intervention, all participants were given standard practices of care, including risk-reduction counseling, and education on STDs. The participants were asked to return for follow-up appointments at 4, 8, 12, 16, 24 weeks, and then every 12 weeks thereafter (Grant et al., 2010). During those visits, an HIV test was administered and the self-reported number of pills was measured to determine adherence to medication. At the end of the study, 36 individuals from the intervention group and 64 from the placebo group were found to be HIV positive. Interestingly, the report of high-risk behavior decreased throughout the study (Grant et al, 2010). Overall, with the combination of risk-reduction counseling, education, routine testing, and the daily dose of Truvada resulted in a reduction of HIV incidence by 44%.

Another popular study that had positive outcomes for HIV prevention was the Antiretroviral Pre- Exposure Prophylaxis for Heterosexual HIV Transmission study (TDF2; Thigpen et al., 2012). In 2008, Botswana had the second highest prevalence of HIV in the world, with 30-44 year-olds representing 40% of their infected population (Thigpen et al., 2012). The TDF2 study proceeded the TDF1 study trail. The latter evaluated the safety and efficacy of PrEP, whereas participants were given a daily dose of tenofovir disoproxil furmarate and emtricitabine (TDF-FTC) as the intervention in the former. The TDF2 study was a double-blind, placebo-controlled clinical trial focusing on sexually active men and women aged 18-39 years old. To be eligible for the study, participants had to engage in routine testing for HIV, Hepatitis B, and

other STDs (Thigpen et al., 2012). During the recruitment process, most participants indicated that they had only one sexual partner in the previous month. Of the 2,533 individuals screened at baseline, less than half (1,219) of the participants were eligible for the study. Between the intervention and placebo group, medication adherence was measured by pill count. Comparably, Thigpen et al. (2012) noted that the TDF-FTC group adhered to the medication 84% of the time and the placebo group 83.7%. Additionally, approximately 80% of individuals reportedly used condoms during sexual encounters for both groups. None of the participants reported engaging in anal intercourse. At the end of the study, 36 participants became infected with HIV: 10 in the TDF-FTC group and 26 in the placebo group (Thigpen et al., 2012). The overall efficacy of the TDF-FTC daily pill decreased the rate of HIV infection by 62% – which translates to 1.3 cases per 100 persons in the intervention group and 3.1 cases per 100 persons in the placebo group. From the results, Thigpen and colleagues (2012) suggest that sexually active individuals who occasionally used condoms were twice as likely to acquire HIV as those who were using PrEP.

Similarly, a study conducted in Kenya and Uganda, Antiretroviral Prophylaxis for HIV Prevention in Heterosexual Men and Women (also known as the Partners PrEP study), engaged in a randomized trial for HIV-discordant heterosexual couples. HIV-discordant couples means that one partner is living with HIV and the other is not. Baeten et al. (2012) indicated three study groups where one was assigned a daily pill with just a TDF dosing, the second received a combination of TDF and FTC, and the third was the placebo group. For 36 months, 4,747 individuals were followed, including 1,574 participants in the TDF group, 1,579 in the TDF-FTC group, and 1,584 in the placebo group (Baeten et al., 2012). The partner who was not infected with HIV, 62% of them being males, was offered an HIV test, counseling service, couples risk-reduction, treatment for STDs, and free condoms at the time of screening. Following baseline

data collection, participants were re-evaluated every month by receiving a new HIV test and prescription based on their study group, if they tested negative for HIV. During the study period, the retention rate for completing at least one HIV test was 96% or greater and a 98% return rate for the monthly pill count (Baeten et al., 2012). At the end of the study, 82 individuals became HIV positive: 17 participants in the TDF group, 13 in the TDF-FTC group, and 52 in the placebo group. At the end of the study, Baeten et al. (2012) had shown data to have a cumulative reduction rate of HIV by 67% using the TDF drug and 75% with the combination of TDF-FTC. From the results, researchers can infer that taking the combination dose of TDF and FTC can increase the efficacy of reducing HIV infection compared to just taking one dose, but even if a single dose was used it would still reduce the chances of acquiring HIV.

The last notable PrEP trial study was conducted in Southeast Asia. From June 2005 to July 2010, Choopanya et al. (2013) analyzed a slightly different population than the previously stated studies. The Antiretroviral prophylaxis for HIV infection in injecting drug users (IDU) in Bangkok, Thailand (the Bangkok Tenofovir study) sought to determine if IDU could reduce rates of HIV by harnessing the drug tenofovir (Choopanya et al., 2013). A double- blind, randomized control trail involved 17 drug-treatment clinics who recruited 2,413 IDUs that were HIV negative and between the ages 20-60 years old. Throughout the study, Choopanya et al. (2013) provided information that every 28 days participants were assessed based on their adherence, HIV test, and risk-reduction counseling. Study staff assigned participants to a drug based on a random number not known to the study investigator or participants. To ensure this was a double-blind study, both the placebo and intervention drugs were similar in shape, color, and taste (Choopanya et al., 2013). The results of the study were significant with only 50 participants becoming infected with HIV, 17 in the TDF group and 33 in the placebo group. Overall, HIV

incidence was reduced by 48.9% for IDU with higher efficacy in women and those 40 years or older (Choopanya et al., 2013).

As stated from the four most popular studies in the United States, PrEP has significantly shown its efficacy of reducing the chance of acquiring HIV. Although PrEP was approved by the Federal Drug Administration (FDA) in 2012, very few studies have investigated PrEP implementation in local health departments (LHDs). However, in July 2015 the National Association of County and City Health Officials (NACCHO) developed a survey to establish a better understanding of PrEP in clinical settings across the nation. The survey was extensive in questions but assessed similar aspects to the MDHHS PrEP Survey. NACCHO's main goal for the survey was to better understand the role of LHDs activities around implementation, needs, challenges, opportunities, and next steps. The survey invited 500 HIV/STD program managers throughout the country and were randomly selected based on HIV rates, region, and population size. Data was collected through a questionnaire powered by Qualtrics®, which had a two component instrument.

The two components of the survey were LHDs who were engaged in PrEP implementation and the LHDs not engaged in PrEP implantation (Weiss, Smith, Newman, & Kitlas, 2015). From the results of the survey, there were a total of 284 responses, indicating a 58% response rate. From the assessment, 38% of LHDs were engaged in some type of activity with PrEP, 52% of those were from the west region, and 67 % served large populations. After reviewing the responses from those who manage only STD clinics, 4% were prescribing PrEP and 57% were referring patients to other clinics for PrEP. However, all LHDs (including STD clinics), 75% were referring PrEP to high-risk individuals and 10% were delivering PrEP (Weiss et al., 2015). Of the LHDs engaged in PrEP, 50% were conducting community education and

outreach, 29% identified providers and a referral list, 45% collaborated with providers to support PrEP delivery, 43% conducted healthcare provider outreach, 41% conducted training events for staff, 39% participated in PrEP workgroups, 13% monitored and evaluated PrEP, 8% participated in a pilot study, and 6% funded community-based organizations (Weiss et al., 2015).

The survey then asked participants what their optimal role was for PrEP implementation. Responses were consistent with current PrEP activities, with 77% of LHDs expressing a desire to refer high-risk patients to PrEP and 33% wanting to deliver PrEP (Weiss, et al., 2015). The main challenges for LHDs implementing PrEP was limited staff capacity, concern about financial access to PrEP, lack of enough providers willing to provide PrEP, and lack of awareness and knowledge among staff. The latter two responses are particularly important because 77% expressed wanting to refer PrEP but could not due to a lack of education among staff within the LHDs. In regards to LHDs who responded to the question about the need for more information and resources, 51% expressed a desire to know more about cost and reimbursement for PrEP, 49% reported a desire for educating healthcare providers about PrEP, 39% expressed interest in assistance with identifying providers for referrals, and 30% reported needing assistance with protocols for referring PrEP. Weiss et al., (2015), further cited that some resources LHDs thought would help with PrEP implementation include, education materials for providers, additional funding, protocols for referrals, and protocols for prescribing PrEP.

Overall, 53% of those engaged in PrEP implementation plan to expand their activities, while 18% of those not engaged in PrEP activities anticipate they will expand their activities within the next four years. The efficacy of PrEP has been shown to be mostly successful along with surveys assessing PrEP implementation, Michigan's next steps are to follow the same path. Michigan will apply PrEP interventions and activities in LHDs, especially for those who have

high morbidity of STDs and HIV. Michigan's LHD PrEP survey has questions and responses similar to the NACCHO survey.

Public Health Significance / Community Significance

Currently, the CDC does not require any state to report the number of individuals who have been referred to or are actively taking PrEP. As the NACCHO survey stated, a lot of areas are prescribing or referring PrEP, but they are only recording their data through their state surveillance systems or electronic medical record (EMR). Similarly, the MDHHS has little information on who is prescribing PrEP, who is taking PrEP, or what barriers community partners may encounter when attempting to increase PrEP services. Although a survey was created by MDHHS to assess knowledge and capacity around PrEP, it was directed toward private physicians. Thus, more information in this area should be obtained from the public sector. As a venue where hundreds of individuals seek health services daily, a similar survey was distributed to better understand what LHDs are doing regarding PrEP. The survey was designed to specifically determine the challenges, barriers, and future considerations LHDs have within their clinic and how MDHHS can help increase their capacity to implement PrEP. Additionally, the LHD PrEP survey was intended to assist the HIV and STD program in creating new interventions for clinics throughout Michigan.

Interventions could include developing a new way to record individuals who might be prescribed PrEP in the surveillance system or develop protocols for clinics that need assistance implementing PrEP strategies. Most importantly, this assessment was intended to help create better outcomes for patients by finding barriers and reducing the gaps in care for those who are at a higher risk for acquiring HIV. For approximately two months, the current project evaluated current PrEP capacity, implementation plans, and technical assistance needs in LHDs. The

subsequent goal is to increase PrEP knowledge and resources for LHDs, which will take action within the next year. Lastly, over the next five years, the long-term goal is to implement a PrEP intervention in at least three areas of high STD and HIV incidence.

Methods

Sampling

A non-random convenience sampling technique was used to recruit 45 LHDs in Michigan. This type of sampling method was the best option for this survey because it was easy to identify the target population (STD/HIV clinics), which was selected within the 45 LHDs. A pre-existing list of individuals from MDHHS was used to recruit participants so that they could be identified by their LHD. Identification of LHDs through convenience sampling assisted with feedback to MDHHS after finalizing the survey to help exclude participants, if necessary. This method offered the most efficient, accessible, and cost-effective route to collect the data. The groups who received an invitation to participate in the survey were medical directors, health officers, and STD program managers whom worked directly in the STD or HIV clinics. This type of selection was necessary for this specific survey because those individuals would be the most knowledgeable about their local STD/HIV program.

Recruitment

A cover letter describing what the survey was about and who to contact if there were questions or trouble accessing the survey online was emailed to the 45 LHDs. During the second week of the survey, a reminder was verbally relayed at the annual STD/HIV Conference where most eligible participants were present. On the day the survey was initially supposed to be closed, a reminder email was sent to participants notifying them that the survey has been

extended for another week. At the beginning of the fourth week, the remaining LHDs who did not fill out a survey were directly contacted via telephone or email to complete the survey. This last step was done to guarantee all 45 LHDs would complete the survey. The survey was monitored on a weekly basis to ensure the sample was being collected and that there were no errors. Participants were not offered any incentives for completing the survey, nor did they face any penalties for choosing not to take the survey. By the close of the survey, a total of 42 of the 45 LHDs responded.

Procedures & Data Collection

All study procedures were reviewed and approved by the University of Michigan – Flint Institutional Review Board (IRB). MDHHS did not require an application for IRB. The final report will be disseminated to each LHD for reflection and improvement of PrEP activities.

Participants were asked to complete a self-administered, 20-25 item (depending on responses) survey via SurveyMonkey. Survey items were answered via yes/no, open-ended, and multiple choice responses. The survey was comprised of five sections: background on the clinic and PrEP, engagement in PrEP activities, PrEP capacity and implementation, next steps for PrEP implementation, and resources or tools for PrEP. PrEP capacity and engagement were assessed via participants' responses to the question, "Do you offer any PrEP related services in your clinic?" Each response determined which corresponding group of questions the participant would answer. Responses included the following: we are prescribing PrEP, we are referring individuals to other clinics for PrEP, we don't know much about PrEP and are not doing any activities around PrEP, we know about PrEP but are not doing any activities around PrEP, and we are interested in PrEP but do not know where to start. The latter three responses were grouped into one group, for analysis purposes. Participants were asked to determine to which group their

clinic belonged. Following that selection, a skip pattern was presented based on the previous response. All surveys were anonymous with the exception of knowing which LHD was reporting their answers. This was mainly used to receive direct feedback from a certain clinic. After the survey ended, only the PI (Masters of Public Health student) gathered all responses and statistically analyzed the data. Descriptive statistics were applied using Microsoft Excel formulas. Open-ended data was added to the end of the results section to review personal comments from some LHDs for feedback to MDHHS.

Statistical Analysis

Participants were grouped by current PrEP activities pertaining to their clinic at the time of assessment. The response groups were mutually exclusive and three separate analyses were required to produce the correct output using Microsoft Excel. The PI analyzed the data from responses of each group by sorting through every question and then reviewing the responses to obtain a frequency for that particular group. Tables and figures with proportions were created for the three response groups using Microsoft Excel formulas for visual representation of data.

Results

From the surveys that were distributed, there was a total of 58 responses which included 42 of the LHDs in Michigan. Some surveys had more than one response but it was intended to gain a variety of data from all levels of management. Of the 58 respondents, the most frequent profession that completed the survey was a registered nurse (67%), followed by nurse practitioners (12%), and less than 2% was either a social worker, physician, medical director, or other profession (see Graphic A1). Survey responses yielded three groups: 12% of LHDs that

reported prescribing PrEP (Group 1), 52% that reported referring PrEP (Group 2), and 36% that reported not doing any activities around PrEP (Group 3; Graphic A2).

Background information on the clinic and PrEP activities were reported by all seven participants of the first survey response group (Table B1). Forty-three percent of the data from the clinics in the first group was completed by nurse practitioners. Each of the clinics in the first group indicated that at least a quarter of primary care, family planning, mental health services, medication adherence support, insurance navigation, transport assistance, and other was offered in their LHD. In addition, 86% of respondents had a nurse practitioner on-site at least four hours per week. Of the LHDs that were billing, 43%billed for HIV services, 86% for STD services, 29% for hepatitis services, and 43% for family planning. Three clinics reported prescribing PrEP to 10-24 individuals in the past year. A majority of the clinics specified they were doing one of the following: taking a comprehensive sexual history (100%), determining if a patient is eligible for PrEP (100%), ensuring that front desk staff are aware that PrEP is offered and can triage patients accordingly (86%), ensuring that the clinic knows about the HIV consultation portal (86%), and ensuring that the clinic has protocols to link patients to support services (86%).

The number one reason that clinics in group one started to prescribe PrEP was due to the patients increase interest, as reported by 71% of the group one respondents. In addition, 43% indicated that the increase of discussion at conferences and trainings influenced them to implement PrEP. Eighty-six percent reported that education and training about PrEP for staff is based on in person trainings with or without continuing education credits. An error in the survey prohibited insight regarding the challenges, strengths, or concerns for the first group. The user error was caused by a missed step in the survey development processes and a lack of testing before the survey was sent. Participants in response group one expressed that 86% would like to

continue to support PrEP, 43% would like to do more community outreach in the future, and 71% of participants would like to help other clinics. Over half (57%) would like to expand their activities by monitoring and evaluating PrEP. Following those who would like to monitor and prescribe PrEP, 86% reported that they recorded their prescribing activities through their clinic EMR. On a positive note, 71% stated they did not need more training at their clinic.

The second survey response group was composed of the 30 respondents who indicated that they are referring PrEP (Table B2). Different from the first group, approximately three-quarters (73%) of the responses came from registered nurses. Thirteen clinics (43%) had a nurse practitioner on-site at least four hours a week and eleven (37%) had a physician. Again, in contrast to the first group, only 43% of clinics offered family planning services and 33% offered insurance navigation, suggesting that the other services were not provided at all. Out of 30 responses, those who were billing for services revealed that nine clinics billed for STD services and seven clinics for family planning. One-third of the respondents in the second group stated that they had referred 1 to 9 individuals for PrEP and less than a quarter of the respondents stated they referred over 50. However, 17% did not respond to this question. Analyzing the clinic processes for the second group, respondents indicated yes to the following: taking a comprehensive sexual history (76%), providing patients with information on PrEP (73%), determining if a patient is eligible for PrEP (33%), being aware of the HIV consultation portal (43%), and having protocols in place for linking patients to support services (57%). Of the clinics who stated they were knowledgeable about services that pay for PrEP, 27% knew about Healthy Michigan, 57% knew of Medicaid, 40% knew of GILEAD, and 37% knew of private insurers.

Clinic capacity – a critical component to prescribing PrEP – was evidenced in the second group as follows: 21 (70%) of the respondents disclosed that they could test every three months for HIV, 23 (77%) could perform STD screening, 15 (57%) screened for hepatitis, 21 (70%) can do pregnancy tests, 9 (30%) could do a urinalysis, and 6 (20%) could monitor creatinine levels. The main source for monitoring PrEP for the second group was utilization of Evaluation Web (a surveillance system that collects data on HIV; 40%), and most did not have a way to record their referrals (30%). PrEP referrals were mostly being made to private physicians (40%) and HIV clinics (33%). Similar to group one, the training and education about PrEP was done through training events with or without continuing education credits (73%) and utilizing MDHHS resources (60%).

Unlike the first group, data on strengths and weakness was captured for the second group. Strengths of the clinic, when it came to referring PrEP were as follows: the ability to engage in conversations about PrEP (57%), the ability to offer educational material (53%), and the ability to assist individuals with routine testing (67%). Half of the LHDs referring PrEP reported their main concern to be that their clinic does not have enough staff and concerns with billing and reimbursement. For future implementation, only 17% stated they would like to begin prescribing PrEP, 60% wanted to create more education and training opportunities for staff, and 50% of participants would like to either create their own educational materials or engage in community outreach. Finally, the second group reported the need for more tools and resources such as education for staff members about PrEP (67%), more cost and payment options (57%), more monitoring and evaluating of PrEP efficacy (36%), more educational materials for patients (57%), more protocols and examples from other clinics (53%), and more guidance from the state

health department (47%). Ten (33%) participants expressed that it would be unlikely to prescribe PrEP in their clinic.

The final group of 22 survey respondents reported that they were not doing any activities around PrEP, thus making them an ideal population to focus on in the future. Out of the 22 respondents, 17 of them were registered nurses and 2 were medical directors. When asked if clinics had a nurse practitioner, physician assistant, or physician on-site at least four hours per week, 41% reported having a nurse practitioner, while 32% reported having a physician. The most common services offered among those in the third group were, family planning (77%), insurance navigation (27%), and other services specified by the respondent (27%). For services that were billed at these clinics, 77% were STD services, 73% family planning, and 20% of clinics were not billing at all. For LHDs clinic processes, those who responded yes to the question indicated 68% were taking a comprehensive sexual history, 77% knew where to get PrEP information, 23% provided patients with information about PrEP, and 86% indicated they had protocols for linking patients to support services. On the contrary, 77% said their clinic does not have a way of determining if a patient is eligible for PrEP and 41% do not know where to refer individuals. Sixty-eight percent of clinics offered HIV testing every three months, 82% offered STD screening, 40% screened for all hepatitis, 77% offered pregnancy tests, and 36% could perform urinalysis. However, 63% of LHDs could not perform testing for creatinine.

When LHDs were asked about their main concern for referring or prescribing PrEP, clinic responses were that they do not have enough staff (50%), there is a lack of awareness and knowledge among the department (27%), PrEP is not in demand in their clinic (41%), there are difficulties with laboratory monitoring (36%), and there are concerns about billing and reimbursement (45%). When asked about their ability to increase activities for PrEP in the future

and what activities they would include, 55% of the participants indicated community education and outreach, 32% stated to create flyers and pamphlets for the clinic, 41% said healthcare provider education and outreach, 32% mentioned training events for staff, 18% mentioned prescribing PrEP, and 41% would collaborate with healthcare providers to support PrEP up-take.

Additionally, when asked about preferred methods for employee trainings, a majority of the respondents expressed interest in in-person trainings with or without CMEs/ CEUs (63%), collaboration with other departments (50%), educational webinars (73%), and utilization of MDHHS resources (73%). Overall, 32% of the third group reported that they want to implement a PrEP intervention, 46% would like to engage in more community outreach and education, 50% said they would like to develop educational materials for patients and staff, and 18% mentioned a desire to monitor and evaluate PrEP. Respondents from this group reported that it would be beneficial to have more of the following: educational materials to share with patients (73%), protocols for PrEP implementation (59%), examples of PrEP implementation from other clinics (59%), tools to assess community interest (36%), resources to assess individual risks (64%), information on billing (55%), guidance from the state health department (46%), and guidance on monitoring PrEP (45%). Forty-one percent of the clinics in response group three had expressed it was unlikely to implement PrEP in the future, 77% were undecided, and 10% would attempt to implement PrEP in the next six months to two years.

Lastly, the only open-ended data from the survey varied from each clinic but included valuable feedback. From the 58 responses, 24 participants provided statements about what they feel MDHHS could help with PrEP implementation. The first group had five responses, the

second had thirteen, and the third had six responses. See Appendix C for direct quotes from LHDs.

Discussion and Limitations

Since this is the first assessment tool used in Michigan looking at LHDs and their activities around PrEP, it should be considered baseline data. From the data gathered in the survey, we were confident that we could understand what LHDs are doing with PrEP and how MDHHS might be able to assist them with future implementation. For those in the first response group (i.e., those who are prescribing PrEP), evidence showed that most clinics will continue to support PrEP initiatives and are willing to support other clinics with PrEP implementation. Unfortunately, we were not able to learn from their strengths and weakness due an error of missing questions in the survey. The second group was comprised of those either undecided or not likely to prescribe PrEP in the future but were more interested in education and training for staff and patients. Although, the second group's main concerns were that their clinic does not have adequate staff necessary to keep track of billing and reimbursement for PrEP. Group three was undecided or not likely to implement PrEP in the future, but were open to receiving all tools and resources to gain more information about PrEP, especially for patients and staff. For those specific LHDs who may not be implementing or expanding any PrEP activities in the near future, we can suggest that MDHHS can increase distribution of education, tools, and resources about PrEP.

Additionally, comparing groups one and two, the first variation between the groups was the background on the clinics. In the first group, almost every service offered to patients and services billed in the clinic was selected by participants. The second group indicated very little services offered, did not bill for HIV services, and only billed for a few STD services. The last

group only billed for STD services and family planning services. Groups 2 and 3 did not have providers on-site at least four hours a week as frequently as Group 1. Different dynamics between the clinics could be a reason why only seven clinics are prescribing PrEP. Likewise, some implications for the STD program would be to first start with determining which clinics have a provider on-site at least four hours a week. Only responses from groups one and two revealed that they had either a nurse practitioner or physician on-site at least four hours a week. This may not be a barrier to prescribing or referring PrEP in those clinics. However, those who are not doing any activities around PrEP cannot be prescribing without a prescription from a nurse practitioner, physician assistant, or physician.

Continuing with the background of the clinic, the first group of clinic processes included determining if an individual is eligible for PrEP. According to the responses, all participants in this group were successful in completing this task. It is worthy to mention that this is one of the first steps to PrEP implementation. In order to prescribe PrEP, clinics must know which populations are at-risk for acquiring HIV and how to effectively communicate that throughout the clinic. The clinics in the first group can set examples for others to assist with PrEP implantation. Considering the clinical processes for group three, 77% of individuals who responded to the survey did not have a process for determining if a clinic was eligible and 41% did not know where to refer individuals for PrEP.

This draws attention to these clinics implying that they need helping finding at-risk patients before they can move any further with implementing PrEP. This could come from the STD program by directing those clinics to the MDHHS website, which houses the PrEP Toolkit. Another solution could be to have the STD epidemiologist develop a specific criteria list for clinics to recruit eligible patients. Following clinic processes, the next step would be to assess

participants' lab capacities. Determining lab capacity for clinics is vital to the process of enrolling individuals on PrEP.

The lab capacity question on the survey thoroughly displays what test must be done before prescribing PrEP and whether they have the ability to do so. An obstacle for most clinics is the creatinine clearance. Between the second and third groups, over fifty percent of clinics do not have the capacity to screen individuals for their liver function. This is one of the prerequisites for an individual to be prescribed PrEP. Also, GILEAD (2016), the creator of Truvada, indicates side effects of PrEP that can cause damage to the liver over time, so it is necessary to run this test. Therefore, more follow-up should be led by the STD program for those LHDs that cannot perform this laboratory requirement. The same follows for the other lab capacity functions. Although, having the inability to conduct creatinine screening had the most number of responses, we cannot rule out these clinics for future prescribing. MDHHS has reached out and engaged in conversations with the state laboratory and CDC to find a viable option in determining if clinics could increase creatinine screening at a low-cost to patients in the future.

Aside from clinic processes and laboratory capacity, other attributes in a clinic play a role in PrEP implementation. For instance, 85% of the first group was successful at creating relationships with providers and community partners. Also, group two indicated that, for future expansion with PrEP they would like to do outreach, education, and collaboration with healthcare providers. As for group three, if they were to start implementing PrEP, over half (55%) stated they would like to do community outreach and education and 41% would want healthcare and provider education and outreach.

For those only referring and not doing any activities around PrEP, this feedback can be a sign that, although they may not be able to currently participate in PrEP activities, MDHHS

could create a position, like a liaison. This position would specifically work with PrEP and assist with collaboration between the health department and other providers. The position would have an array of duties, ranging from helping with provider outreach and education, connecting patients to providers for PrEP referrals, or assisting patients with follow-up appointments. Another valuable question from the survey offered to the second and third groups asked about what resources or tools would assist them with future PrEP implementation. This question had quite high proportions of responses, which should be considered significant feedback for MDHHS.

It is key to take what we learned from the survey and apply new interventions to clinics, even if they are already prescribing PrEP. For example, questions about the need for educational materials to share with patients, protocols, resources to assess an individuals' risk, examples from other clinics, and more information on billing was indicated by more than fifty-percent of responses. All of these areas could be covered in a protocol developed by the STD program. A protocol along with educational sessions about PrEP implementation would benefit LHDs because they do not have any previous data or interventions to replicate. Thus, the state STD program can play a vital role in creating resources for the LHDs to learn and expand PrEP implementation.

Finally, open-ended evidence can be of use to MDHHS by helping focus on clinics that need the most assistance with PrEP implementation. The feedback from those who are prescribing was considerably helpful so that those clinics can take next steps for PrEP expansion. Specifically, participant responses to the open-ended questions voiced the need of assistance in developing a tracking tool within EHR to notify patients when due for next PrEP visit, and to incorporate PrEP prescriptions in STD/HIV incidence reporting to help identify trends, to name a

few. Currently the state STD program is creating new fields in their STD reportable condition form so that this information can be documented. Respondents also mentioned the desire to provide pre-written policies and procedures for LHDs and provide more marketing materials – paper and video – to participants. This suggests that although this particular clinic has prescribed PrEP to individuals, perhaps having a protocol created by the state STD program would be beneficial to future clinics who would like to start prescribing. The state STD program can inquire with this clinic to develop procedures and protocols. This specific statement was made throughout the survey from respondents in all three groups, suggesting it could be a useful tool all around – even for those who would like to refer PrEP.

The second group of the study provided the most feedback, stating that the barriers to PrEP implementation revolved around funding, staffing, and a lack of education. The funding side of the spectrum goes in hand with the staffing side, and may not be fixed at this time, especially with a nationwide budget cut to all local health departments. However, because so many LHDs indicated that some of their staff and clients need more education on PrEP, this is a job the program can handle. There are pamphlets and flyers that are currently being distributed to LHDs. After the survey was completed, the goal is to have the STD program create resources, webinars, and protocols for clinics to use if they wish to implement PrEP. Overall, clinics feel they do not have the tools or resource to get started, which suggests a need for more outreach from the state health department in these areas. Again, comments were made about education among all groups. This should be the first step when thinking about how to shape the way PrEP will be implemented in clinics, starting with education.

This study had several limitations. First, three questions were missing from the survey for the first response group. These questions focused on concerns, strengths, and weaknesses for

those who were prescribing PrEP and would have been particularly important to future implementation in clinics who are not prescribing PrEP. Perhaps there should have been a pilot test for a select few individuals to identify errors or challenges when completing the assessment. Additionally, there are some questions that did not require a response, which meant valuable data could have been missing if it was not filled in. In the future, this will be required in order to gain a better understanding of exact activities around PrEP.

Another big limitation to this study was the inconsistency of questions between all three groups. There were some questions that were addressed in all surveys and then there were some questions only presented in one or two of the groups. Comparably, the survey was sent to 45 LHDs, but there were a few occasions where there was more than one respondent from a LHD. From those who did have more than one respondent from the same LHD, there was a variation of responses from each individual. Meaning, within the same clinic, one response stated they were prescribing PrEP and other stated they were not. Although, there was no over-lapping with the data, it was still analyzed by number of responses, not by number of health departments. Also, selecting a convenience sampling technique yielded some disadvantages, such as under-representation of the sample because multiple sites were invited to the survey from the same LHD. This caused a variation of responses from the same LHD but individuals that may be at a different clinic location than the first.

Moreover, there was a possibility there were too many groups in this study that made the data difficult to analyze. From an analysis view-point, further trial and error could have been explored before sending the survey. Analysis was complicated due to the fact that there were multiple responses to questions, there were three response groups to the study, and not every group was offered the same questions. Therefore, the qualitative analysis had to be conducted

without the use of a statistical software system. Since this was a baseline study, future review and modification of this survey should be evaluated to capture the expansion of PrEP implementation in LHDs across Michigan.

Competencies

1. The current project is an example of an evidence-based approached to public health. Throughout the process of developing, distributing, and analyzing a survey, it was crucial to apply epidemiological methods, and to utilize qualitative and quantitative analyses to interpret the results of the survey. Before the survey was created, a thorough review of the literature was conducted, which provided insight into the types of populations that are targeted in interventions to reduce rates of HIV. After research on the public health significance of this topic, further analysis of previously implemented surveys was conducted to determine the nature of the survey. The PrEP LHD survey was then created using a convenience sampling type method, which was decided due to the previous research supporting the increased strength of a survey using these types of questions. The results for this project were baseline and specifically intended for the use of the STD/ HIV program. Additionally, MDHHS will distribute similar surveys in the future for evaluation of LHDs and PrEP. After the results were interpreted, a presentation was created and shown to the STD management team at MDHHS. With the success of this survey and the very small number of states that have conducted a survey around this topic, we plan to develop a manuscript based on the current study to be published in a peer-reviewed journal.

2. This project also incorporated planning and management to promote health. Before any survey is created, a community assessment is necessary to determine if there is a need for an intervention. From scholarly research articles and reviewing Michigan data on HIV, it was evident that there has been an increase in HIV rates, especially among young Black MSM. Since a biomedical intervention was developed almost five years ago, it was important to introduce PrEP to this population. However, research has shown that this is not a typical habit for individuals at-risk for HIV to encounter. After understanding the public health problem, it is even more important to determine capacity in clinics to see if it is viable to implement this type of intervention. This survey was developed as an assessment tool for MDHHS to learn from LHDs how the design of a program or intervention may be created and implemented. For MDHHS, this baseline data can increase awareness around PrEP in LHDs and create new interventions to help reduce rates of HIV. In the future, MDHHS will be able to refer to this study and re-revaluate public health programs that were implemented as a result of this survey. It is also worthy to note that principles and tools of a budget and resource management was established throughout the PrEP LHD survey. Of the 57 respondents, 23 of them stated their main concern for implementing PrEP was the lack of staffing and funding. Unfortunately, resource allocation and the ability to pay for the screening requirements for PrEP can cost a lot of money that clinics do not have. Specifically, with the new administration, most STD and HIV programs in the United States have either lost funding or will in the future. According to the President’s proposed budget for 2017, the CDC HIV/AIDS, Viral Hepatitis, STD, and TB program had a 5 million dollar reduction in funding as whole, with that 5 million dollar loss coming solely from STD prevention money. Budget and resource management was a small part of the survey but it is continuously discussed and highly acknowledged at the state level.

3. After completing my internship, I feel as though this project demonstrates my competence in my knowledge of public health and health care systems. Although, the assessment was not dealing with international settings, I was able to work within state and national systems. The literature I reviewed on national systems helped identify the questions and type of survey that would be created. Reviewing research from different countries also helped preface the purpose of the survey. From an organizational level, it was very evident from the survey that some clinics were not all on the same page when it came to PrEP activities in their clinic, especially compared to the state level health department. Although most health department employees at the state-level reportedly knew about PrEP and expressed a desire to create interventions to increase its usage, fewer people at the local-level share this same knowledge. These results were shocking because while working on my capstone project within the state health department, as well as working during my master's degree, you learn that one of the main goals for public health is reducing disparities and health equity. However, if certain people are in disagreement or have different viewpoints about a topic throughout the clinic, like PrEP, then those factors increase. Hopefully, this was not a direct affect to individuals but it is critical to be organized structurally in order to have successful outcomes. If there is no internal organization then how will clinics have successful outcomes for their patients? I am assuming it would be very difficult. On a lighter note, this data was brought to the program so they can learn more from the local health sector and help tackle challenges not only pertaining to PrEP but to every public health problem.
   Additionally, during my internship I replicated and modified a national and statewide program (Data to Care) to fit the project I was creating, Data to PrEP. I had to engage in numerous conversations locally and review research from the national program in order to figure out how my program was going to operate. It was easy to figure out who to talk to once I received an organizational chart. Visually seeing how the STD program was categorized, helped me find who the right person was to talk to about my program. Moving toward the Detroit Health Department, they were currently implementing the national program so that was my first contact. I obtained a lot of information at the local level such as, protocols, flow- charts, and recruitment scripts for the program. I then was able to transfer those resources to my proposed program. The logic around the program was that surveillance data could be utilized based on a specific criteria to find eligible candidates for PrEP. I then had to establish the criteria by communicating with multiple levels and work with the state and national databases to determine my priority population for the program. This included using Michigan's Disease Surveillance System (MDSS) to find eligible candidates for PrEP and the national HIV registry (Enhanced HIV Surveillance System, eHARS) to determine if those candidates HIV status. This process was done using a software system called, LinkPlus, which allowed me to take two files and link them together by selecting a few variables that will match individuals who may have an STD and HIV infection, or not. Above all, it was an experience working with multiple levels of public health and different registries that hold valuable patient information. There were a lot of trial and errors working with both systems due to the fact that this was my first time using them. Most systems I utilize operate differently and they each have their own flaws. That was a big learning curve throughout this process, it also made me realize that there are too many systems with all the same

information. This led me to believe we should have an integrated system, specifically between HIV and STDs, whether that be national or locally. Since information is present in multiple systems throughout Michigan, it would be beneficial for not only the state but for our patients, that information be housed in one system. I believe an integrated system could reduce disparities in health. For example, an integrated system can help achieve health equity by having access to multiple records for an individual. If field workers follow up with someone who has a positive gonorrhea or chlamydia test, that worker is going to want to know if they are HIV positive so that they can have their partners tested for chlamydia or gonorrhea and especially HIV. An integrated system can also help at an organizational level. In the STD and HIV program, there are staff who follow-up on only syphilis cases and then there are staff who follow-up on only HIV cases. Often times, an individual is newly co-diagnosed with both syphilis and HIV, therefore two different staff members are following-up with this person, twice. They are having the same interview with this patient. That can drive the patient away stating that they have already be interviewed, and after news like that they do not want to be interviewed again reducing the chances of them coming back for follow-up appointments or securing partners. Therefore, integrating systems and departments would most definitely reduce the public health impact on an individual and community. It think it is vital to have organization and integration in order to have successful patient outcomes.

4. Finally, the fourth most fitting competency for my MPH, concentration in health education, is applying data collection methods to assess a community's needs, assets, and capacity. The PrEP LHD survey was projected to fulfill that competency and more. Clinics, who know their patients best, were able to identify what types of populations they were meeting. When creating this survey, I did not know much about LHDs and their relationships with their clients. Before thinking about the survey, my first step was to research the topic and determine the real reason to assess LHDs and their status around PrEP. This was accomplished by reviewing surveys conducted by nationally publicized scholarly articles and other various state surveys. This helped identify what type of audience would be receiving the survey, the layout, and how questions would be illustrated. Questions developed on the survey were developed according to previously implemented surveys, with similar questions to the LHD PrEP survey. As a result of the presentation to the management team continuous monthly meetings called, PrEP Internal Workgroup, were created. These meetings incorporated discussion about current PrEP activities, workshops, or conversations that are being held at the state level but then returned to the local level. The workgroups are very productive in creating ways to increase PrEP implementation throughout the state. Brian-storming about how to plan for a prevention program, such as PrEP, is continuously discussed as MDHHS strives to increase awareness in every LHD. In the future, the STD program will utilize this survey to follow-up with LHDs and re-evaluate PrEP activities.

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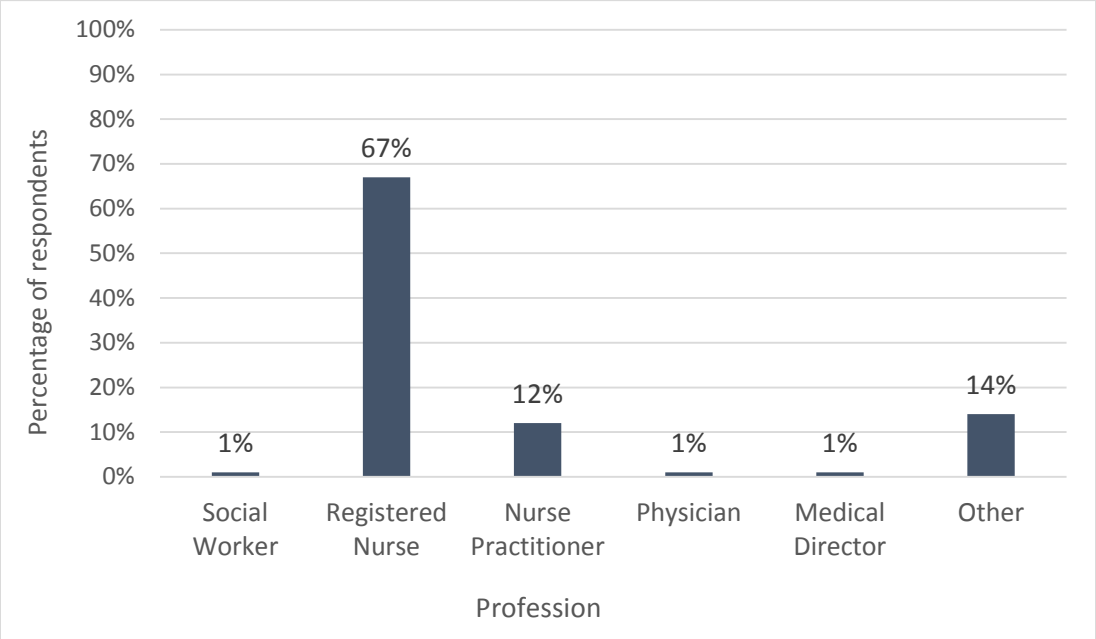
Appendix A

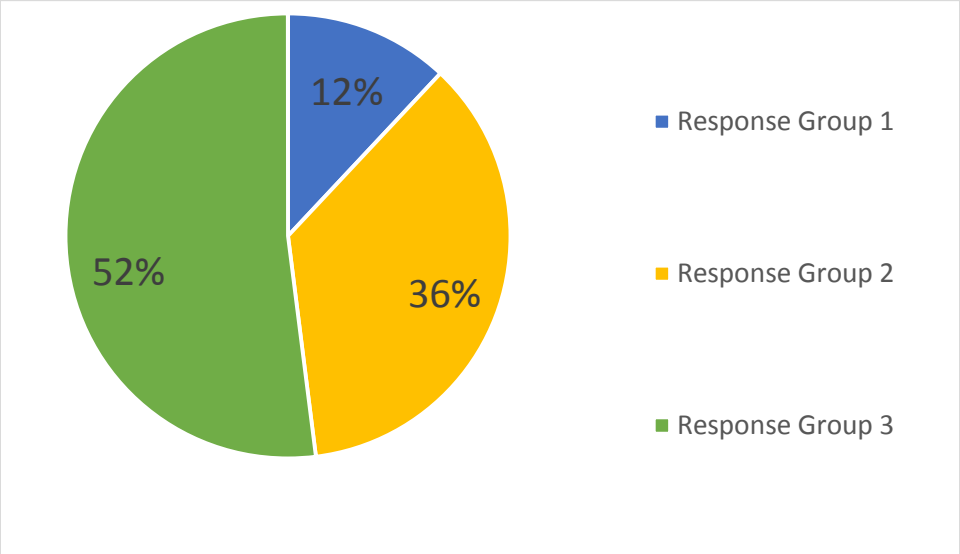
Graphic A1

A variety of professions who completed the Michigan PrEP LHD Survey, 2017.



Graphic A2

The distribution of Local Health Departments in Michigan engaging in activities regarding PrEP, 2017.



Appendix B

Table B1

Questions and responses from LHDs prescribing PrEP (Survey Response Group 1) in Michigan, 2017

Question	Response	Count	%
Do you offer any PrEP related services in your clinic?	We are prescribing PrEP	7	
What is your profession?			
	Social Worker - no. (%)	1	14%
	Registered Nurse	0	0%
	Nurse Practitioner	3	43%
	Physician Assistant	0	0%
	Physician	1	14%
	Medical Director	0	0%
	Other (please specify)	2	29%
Does your clinic have any of the following providers on-site at least four hours per week?			
	Nurse Practitioner	6	86%
	Physician Assistant	0	0%
	Physician	1	14%
	None of the above	0	0%
What services does your clinic offer?			
	Primary Care	3	43%
	Family Planning	4	57%
	Mental Health Services	2	29%
	Medication Adherence Support	2	29%
	Insurance Navigation	5	71%
	Transportation Assistance	2	29%
	Substance Abuse Treatment	0	0%
	Other (please specify)	2	29%

Table B1, continued

What services does your clinic bill for?			
	HIV Services	3	43%
	STD Services	6	86%
	Hepatitis Services	2	29%
	Partner Services	0	0%
	Prevention Case Management	0	0%
	Adherence Counseling	0	0%
	Family Planning Services	3	43%
	We are not billing	0	0%
	Other (please specify)	1	14%
Approximately, how many individuals have you prescribed PrEP in the last year?			
	1 to 9	1	14%
	10 to 24	3	43%
	25 to 50	1	14%
	Over 50	1	14%
	No response	1	14%
Do you feel your clinic needs more training on PrEP?			
	Yes	2	29%
	No	5	71%
Thinking about your clinic processes please respond to the questions below.	For those who answered yes only:		
	For all incoming patients, does your clinic take a comprehensive sexual history?	7	100%
	Does your clinic have a process for determining if a client is eligible for PrEP?	7	100%
	Are your front desk staff aware that PrEP is being offered in your clinic?	6	86%
	If a patient asks about PrEP, is your front desk staff able to triage calls and visits appropriately?	6	86%
	Does your clinic know about the Michigan HIV Consultation Portal?	6	86%
	Do you have protocols for linking patients to support services (mental health, transportation, substance abuse treatment, etc.)?	6	86%

Table B1, continued

Are you aware of programs that help pay for PrEP?			
	Healthy Michigan	5	71%
	Medicaid	6	86%
	GILEAD	7	100%
	Patient Advocate Foundation	2	29%
	Patient Access Network Foundation	2	29%
	Private Insurance	6	86%
	I am not aware of any	0	0%
Which of the following influenced your clinic's decision to begin prescribing PrEP?			
	Patient's increase interest in PrEP	5	71%
	The increase of discussion about PrEP at conferences and trainings	3	43%
	Support and encouragement from other clinics	0	0%
	State health department support	1	14%
	Community outreach	2	29%
	Other (please specify)	2	29%
How does your clinic monitor the number of individuals being prescribed PrEP?			
	Michigan Disease Surveillance System (MDSS)	0	0%
	Evaluation Web	0	0%
	Partner Service Web	0	0%
	Our clinic EMR	6	86%
	We do not have a way of collecting information on PrEP	0	0%
	Other (please specify)	1	14%

Table B1, continued

What additional PrEP activities is your clinic implementing?			
	Community education and outreach	5	71%
	Building relationships with providers and community organizations	6	86%
	Creating images and informational flyers/ pamphlets for the clinic	3	43%
	Holding training events for staff	2	29%
	Connecting patients with support services	5	71%
	Other (please specify)	0	0%
How is your clinic educating and training employee's about PrEP?			
	Electronic letters/ bulletins with health information	0	0%
	Holding in-person training events with CME's/ CEU's	2	29%
	Holding in-person training events without CME's/ CEU's	4	57%
	Participating in educational webinars	5	71%
	Promotion of federal training opportunities (i.e. AIDS education and Training Center)	3	43%
	Utilizing MDHHS resources	4	57%
	None of the above	0	0%
	I don't know	0	0%
	Other (please specify)	3	43%
What are your clinics strengths when it comes to prescribing or referring PrEP?			
	Engaging in conversations regarding PrEP	0	0%
	Offering educational materials on PrEP	0	0%
	Connecting patients to support services	0	0%
	Talking to partners of persons living with HIV about PrEP	0	0%
	Assisting individuals with follow- up appointments for PrEP	0	0%
	Helping maintain adherence for PrEP	0	0%
	Other (please specify)	0	0%

Table B1, continued

What challenges has your clinic faced when incorporating PrEP as an intervention?			
	Lack of PrEP awareness and knowledge among department staff	0	0%
	The length of time that it takes for additional testing and counseling	0	0%
	Lack of staffing in your facility to support PrEP	0	0%
	Difficulties with laboratory testing and monitoring	0	0%
	Financial access to PrEP for patients	0	0%
	Concern about reimbursement from third-party payers	0	0%
	Our clinic did not face any challenges	0	0%
What is the main concern for prescribing PrEP?			
	Our clinic does not have adequate staff	0	0%
	PrEP is not in demand at our clinic	0	0%
	Billing and reimbursement	0	0%
	Lack of support from upper management	0	0%
	N/A we do not have concerns at this time	0	0%
	Other (please specify)	0	0%
What are your clinic's future goals for ensuring PrEP is a sustainable intervention?			
	Continue to support PrEP with current activities	6	86%
	Engage in more community education and outreach	3	43%
	Develop partnerships with other clinics and organizations	1	14%
	Create more training and education opportunities for staff	3	43%
	Develop a survey for patients to assess PrEP knowledge and usage	0	0%
	Apply for grants to fund more PrEP activities	1	14%
	Monitor and evaluate PrEP uptake and impact	7	100%
	Create new positions in our clinic to assist with PrEP implementation (i.e. PrEP Navigator or Nurse Practitioner)	1	14%
	Other (please specify)	0	0%

Table B1, continued

How does your clinic plan to expand PrEP activities?			
	Create trainings and educational sessions	2	29%
	Develop educational materials for our patients	1	14%
	Assist and offer support to other clinics who want to begin prescribing PrEP	5	71%
	Develop a survey for patients to assess PrEP knowledge and usage	1	14%
	Evaluate and monitor PrEP uptake and impact	4	57%
	Other (please specify)	1	14%

Table B2

Questions and responses from LHDs prescribing PrEP (Survey Response Group 2) in Michigan, 2017

Question	Response	Number	%
Do you offer any PrEP related services in your clinic?	We are referring individuals to other clinics for PrEP	30	
What is your profession?			
	Social Worker	0	0%
	Registered Nurse	22	73%
	Nurse Practitioner	4	13%
	Physician Assistant	0	0%
	Physician	0	0%
	Medical Director	0	0%
	Other (please specify)	4	13%
Does your clinic have any of the following providers on-site at least four hours per week?			
	Nurse Practitioner	13	43%
	Physician Assistant	1	3%
	Physician	11	37%
	None of the above	12	40%

Table B2, continued

What services does your clinic offer?			
	Primary Care	1	3%
	Family Planning	13	43%
	Mental Health Services	0	0%
	Medication Adherence Support	1	3%
	Insurance Navigation	10	33%
	Transportation Assistance	2	7%
	Substance Abuse Treatment	0	0%
	Other (please specify)	21	70%
What services does your clinic bill for?			
	HIV Services	0	0%
	STD Services	9	30%
	Hepatitis Services	2	7%
	Partner Services	1	3%
	Prevention Case Management	0	0%
	Adherence Counseling	0	0%
	Family Planning Services	7	23%
	We are not billing	6	20%
	Other (please specify)	9	30%
Approximately how many individuals have you referred PrEP to in the last year?			
	1 to 9	10	33%
	10 to 24	1	3%
	25 to 50	0	0%
	Over 50	3	10%
	No response	5	17%
Thinking about your clinical processes please respond to the questions below.	(yes only responses)		
	For all incoming patients, does your clinic take a comprehensive sexual history?	23	77%
	Does your clinic provide patients with information about PrEP?	22	73%
	Does your clinic have a process for determining if a client is eligible PrEP?	10	33%
	Does your clinic know about the Michigan HIV Consultation Portal?	13	43%
	Do you have protocols for linking patients to support services (mental health, transportation, substance abuse treatment, etc.)?	17	57%

Table B2, continued

Are you aware of programs that help pay for PrEP?			
	Healthy Michigan	8	27%
	Medicaid	17	57%
	GILEAD medication assistance program and coupon card	12	40%
	Patient Advocate Foundation	0	0%
	Patient Access Network Foundation	2	7%
	Private Insurance	11	37%
	I am not aware of any	7	23%
Does your clinic have the ability to offer laboratory testing for:	(yes only responses)		
	HIV testing every 3 months	21	70%
	Monitor creatinine clearance every 3-6 months	6	20%
	STD screening	23	77%
	Screening for all hepatitis	17	57%
	Pregnancy tests	21	70%
	Urinalysis	9	30%
How does your clinic monitor the number of individuals you refer for PrEP?			
	Michigan Disease Surveillance System (MDSS)	0	0%
	Evaluation Web	12	40%
	Partner Services Web	2	7%
	Our clinic EMR	6	20%
	We do not have a way of collecting information on PrEP	9	30%
	Other (please specify)	3	10%
Where are you making PrEP referrals?			
	Private Physicians	12	40%
	HMOs	0	0%
	HIV Clinics	10	33%
	Don't know	0	0%
	Other (please specify)	8	27%

Table B2, continued

How is your clinic educating and training employees about PrEP?			
	Electronic letters/ bulletins with health information	9	30%
	Holding in person training events with CME's/ CEU's	15	50%
	Holding in person training events without CME's/ CEU's	7	23%
	Participating in educational webinars	20	67%
	Promotion of federal training opportunities (i.e. AIDS Education and Training Center)	13	43%
	Utilize MDHHS resources	18	60%
	Other (please specify)	1	3%
What are your clinics strengths when it comes to referring PrEP?			
	Engaging in conversations regarding PrEP	17	57%
	Offering educational materials on PrEP	16	53%
	Connecting patients with support services	12	40%
	Talking to partners of persons living with HIV about PrEP	10	33%
	Assisting individuals with routine HIV testing	20	67%
	Building relationships with other providers	10	33%
	Other (please specify)	2	7%
What is the main concern that prevents you from prescribing PrEP?			
	Our clinic does not have adequate staff	14	47%
	PrEP is not in demand at our clinic	20	67%
	Lack of support from upper management	5	17%
	Concerns about billing and reimbursement	13	43%
	Other (please specify)	5	17%
What would your clinic do to expand PrEP activities?			
	Begin prescribing PrEP	5	17%
	Engage in more community education and outreach	15	50%
	Create more training and education opportunities for staff	18	60%
	Develop educational materials for our patients and staff	15	50%
	Monitor and evaluate PrEP uptake and impact	9	30%
	Assign staff to oversee PrEP activities	9	30%
	Apply for grants to fund more PrEP activities	8	27%
	Other (please specify)	4	13%

Table B2, continued

What areas of PrEP does your clinic need more information about?			
	Identifying populations and individuals that are at high-risk	8	27%
	Educating patients about PrEP	11	37%
	Educating staff members about PrEP	20	67%
	Patient assistance for support services	12	40%
	Cost and payment options for prescribing PrEP	17	57%
	Clinical reimbursement for providing services	13	43%
	Establishing a protocol for referring and prescribing	12	40%
	Monitoring and evaluating PrEP	22	73%
	Increasing testing and preventative services	7	23%
	Other (please specify)	2	7%
What tools or resources could be helpful for implementing PrEP in your clinic?			
	Educational materials about PrEP to share with patients	17	57%
	Protocols for prescribing and delivering PrEP	16	53%
	Examples of other clinics that have implemented PrEP	16	53%
	Tools/ surveys to assess community interest and knowledge on PrEP	11	37%
	Resources to assess an individual's risk or who would benefit from PrEP	13	43%
	More information on billing for PrEP	15	50%
	Guidance and direction from the state health department on how to expand PrEP	14	47%
	Guidance or information on monitoring PrEP	12	40%
	Other (please specify)	1	3%
Ideally, when would you like to start prescribing PrEP?			
	As soon as possible	1	3%
	Over the next 1 to 2 years	4	13%
	Undecided	7	23%
	It is unlikely that our clinic will start prescribing PrEP	10	33%

Table B3

Questions and responses from LHDs not doing any activities around PrEP (Survey Response Group 3) in Michigan, 2017

Question	Responses	Number	%
Do you offer any PrEP related services in your clinic?	We are interested in PrEP but do not know where to start OR We know about PrEP but are not doing any activities around PrEP OR We do not know much about PrEP and are not doing any activities around PrEP	22	
What is your profession?			
	Social Worker	0	0%
	Registered Nurse	17	77%
	Nurse Practitioner	0	0%
	Physician Assistant	0	0%
	Physician	0	0%
	Medical Director	2	9%
	Other (please specify)	3	14%
Does your clinic have any of the following providers on-site at least four hours per week?			
	Nurse Practitioner	9	41%
	Physician Assistant	1	5%
	Physician	7	32%
	None of the above	7	32%
What services does your clinic offer?			
	Primary Care	1	5%
	Family Planning	17	77%
	Mental Health Services	2	9%
	Medication Adherence Support	1	5%
	Insurance Navigation	6	27%
	Transportation Assistance	1	5%
	Substance Abuse Treatment	0	0%
	Other (please specify)	6	27%

Table B3, continued

What services does your clinic bill for?			
	HIV Services	2	9%
	STD Services	17	77%
	Hepatitis Services	0	0%
	Partner Services	1	5%
	Prevention Case Management	0	0%
	Adherence Counseling	0	0%
	Family Planning Services	16	73%
	We are not billing	6	27%
	Other (please specify)	3	14%
Thinking about your clinical processes please respond to the questions below.	(yes responses only)	Yes	
	For all incoming patients, does your clinic take a comprehensive sexual history?	15	68%
	Do you know where to get information about PrEP?	17	77%
	Does your clinic provide patients with information about PrEP?	7	32%
	Does your clinic have a process for determining if a client is eligible PrEP?	1	5%
	Does your clinic know where to refer individuals for PrEP?	10	45%
	Does your clinic know about the Michigan HIV Consultation Portal?	4	18%
	Do you have protocols for linking patients to support services (mental health, transportation, substance abuse treatment, etc.)?	19	86%
Does your clinic have the ability to offer laboratory testing for:	(yes responses only)	Yes	
	HIV testing every 3 months	15	68%
	Monitor creatinine clearance every 3-6 months	1	5%
	STD screening	18	82%
	Screening for all hepatitis	12	55%
	Pregnancy tests	17	77%
	Urinalysis	8	36%

Table B3, continued

What is the main concern that prevents you from referring to or prescribing PrEP in your clinic?			
	Our clinic does not have adequate staff	11	50%
	Lack of awareness and knowledge among department staff	6	27%
	PrEP is not in demand at our clinic	9	41%
	Difficulties with laboratory testing and monitoring	8	36%
	Lack of support from upper management	2	9%
	Concerns about billing and reimbursement	10	45%
	None of the above	1	5%
	Other (please specify)	2	9%
What activities would your clinic partake in if you were to start implementing PrEP?			
	Community education and outreach	12	55%
	Create images and information flyers/ pamphlets for our clinic	7	32%
	Healthcare provider education and outreach	9	41%
	Hold training events for staff	7	32%
	Offer medication adherence services	3	14%
	Prescribe PrEP	4	18%
	Collaborate with healthcare provider to support PrEP delivery	9	41%
	Other (please specify)	5	23%
What methods would your clinic like for employee trainings about PrEP?			
	Electronic letters/ bulletins with health information	5	23%
	Holding in person training events with CME's/ CEU's	11	50%
	Holding in person training events without CME's/ CEU's	5	23%
	Participating in educational webinars	16	73%
	Collaborate with other departments or organizations implementing PrEP	11	50%
	Promotion of federal training opportunities (i.e. AIDS Education and Training Center)	6	27%
	Utilize MDHHS resources	16	73%
	Other (please specify)	0	0%

Table B3, continued

How would your clinic like to implement PrEP activities in the future?			
	Implement a PrEP intervention (i.e. refer or prescribe PrEP)	7	32%
	Engage in more community education and outreach	10	45%
	Develop educational materials for our patients and staff	11	50%
	Monitor and evaluate PrEP uptake and impact	4	18%
	Assign staff to oversee PrEP activities	3	14%
	Apply for grants to fund more PrEP activities	2	9%
	None of the above	2	9%
	Other (please specify)	2	9%
What tools or resources could be helpful for implementing PrEP in your clinic?			
	Educational materials about PrEP to share with patients	16	73%
	Protocols for prescribing and delivering PrEP	13	59%
	Examples of other clinics that have implemented PrEP	13	59%
	Tools/ surveys to assess community interest and knowledge on PrEP	8	36%
	Resources to assess an individual's risk or who would benefit from PrEP	14	64%
	More information on billing for PrEP	12	55%
	Guidance and direction from the state health department on how to expand PrEP	10	45%
	Guidance or information on monitoring PrEP	10	45%
	Other (please specify)	1	5%
Ideally, when would you like to start prescribing PrEP?			
	As soon as possible	0	0%
	Within the next 6 months	1	5%
	Over the next 1 to 2 years	1	5%
	Undecided	17	77%
	It is unlikely that our clinic will start prescribing PrEP	9	41%

Appendix C

Direct quotes from a few LHD who responded to open- ended questions on the PrEP survey.

Quote C1

Response group 1 opened-ended responses (5)

> "We need to make PrEP visits faster than visits for active health conditions, so it is more convenient for clients. This is an internal process, not requiring MDHHS training"
>
> "Assistance developing a tracking tool within EHR to notify patient's when due for next PrEP visit. Incorporate PrEP prescriptions in STD/HIV incidence reporting to help identify trends"
>
> "Provide pre-written policies and procedures for LHDs and provide more marketing materials - paper and video"
>
> "Funding to offer PrEP clinics, we only have one provider that prescribes PrEP and our clinics are full. We do not have additional resources to cover the costs"
>
> "More ways of educating staff and clients (the use of an existing survey template or training guide for staff)"

Quote C2

Response group 2 open-ended responses (13)

> "Increase funding for program and establish relationship with medication manufacturer for long-term assistance for clients who need PrEP"
>
> "I think the largest barrier is going to be reimbursement for staff time and helping patients pay for their medication. Education and training on these issues would be very helpful. Thank you for reaching out to us and requesting feedback!"
>
> "Resources and Education"
>
> "We do not have plans to set up a clinic"
>
> "Nothing"
>
> "Recruit PrEP providers in our area"
>
> "Funding to cover staff time; Need Medical support and involvement and need more awareness to Administrative staff about what prep is and it's importance---(*Aim information at Medical Director's; Health Officer's/Directors, and Community Health Service Director's as they are the one's that ultimately make the final decision on whether the agency has the capacity to look at something like this"
>
> "Find someone to convince my medical director and health officer that prescribing PrEP is a necessary function of the health department"

"We may open an STI clinic in the near future, and then would revisit PrEP"

"Obtain the support from Medical Directors and Health Officers so we can implement. Provide education to medical physicians, NP's, PA's, Behavioral Health, etc."

"We would need to have an NP on staff. Currently lack funding"

"trainings, trainings, trainings"

"Offering suggestions and examples of how it would be feasible with our level of staffing"

Quote C3

Response group 3 open-ended responses (6)

"Help with the tools to get started"

"Continue to provide educational materials for LHD staff for both ourselves and community providers and also for clients"

"Increased assistance to low-morbidity counties regarding HIV education and HIV PrEP!"

"Adequate funding to support community outreach and education, staff training, purchase of medication and all other costs associated. We are a very small jurisdiction and would prefer to coordinate with Thomas Judd in Traverse City"

"Assess whether our volume is high enough to make it feasible"

"Discuss with management/medical director"

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